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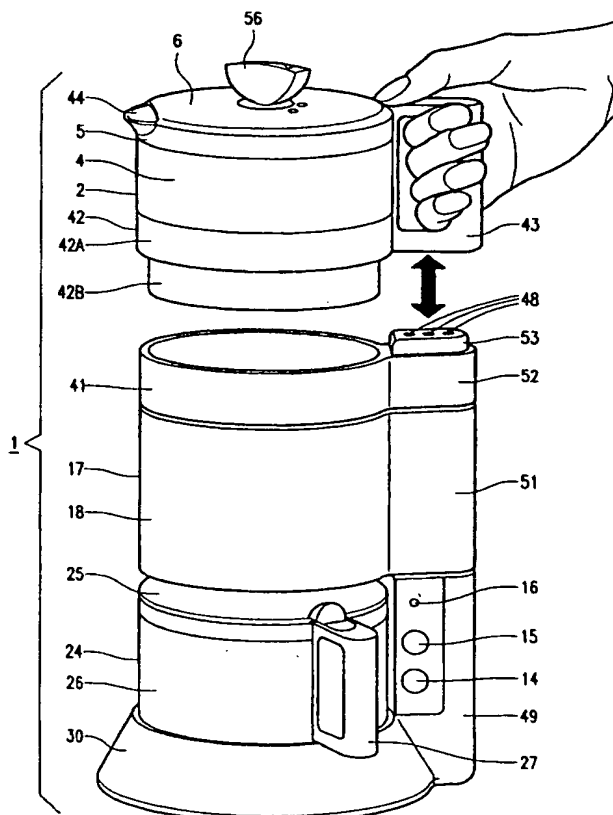
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## (57) Abstract

The invention relates to an electrical appliance for the preparation of infusions, for instance, a coffee maker, which is provided with a water reservoir (2) which can hold water and which comprises a heating element (10) with which the water can be heated and a pot (24) for containing the infusion and which can be placed under the water reservoir, the bottom of the water reservoir being provided with a valve (31) which opens when the water is heated to boiling temperature. According to the invention the water reservoir (2) is a separate unit which can be removed from the top of the appliance for the preparation of infusions, and replaced again. In a particularly advantageous embodiment the removable water jug (2) can be used as a water boiler. When the water jug is used as a water boiler, the closing of a valve (31) in the bottom prevents hot water from flowing out from the bottom.



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## Electrical device for the preparation of infusions

The invention relates to an electrical appliance for the preparation of infusions in accordance with the preamble of claim 1.

Electrical appliances for the preparation of infusions, in particular coffee makers are employed in homes, offices, etc. on a large scale and in various designs and types. Electric coffee makers of the type mentioned in the preamble, whose water reservoir is positioned above the coffee filter, are marketed under the trade name of Philips™, model number HD 5560A and HD 5400. One of the advantages of this type of coffee makers is that the heated water can flow directly, through the force of gravity, from the reservoir and into the coffee filter, so that no special provisions are required for the transport of heated water.

A disadvantage of appliances for the preparation of infusions of the kind mentioned in the preamble as well as of most other known electrical appliances for the preparation of infusions is that in order to fill the water reservoir, either the entire appliance has to be put under a tap to be filled by opening the tap, or the reservoir has to be filled at a distance from the tap by first filling a container such as, for instance, a water kettle with water and subsequently pouring the water from the container into the reservoir of the electrical appliance for the preparation of infusions. The first solution is undesirable because when filling under the tap, water can easily get to electrical parts of the appliance which, for reasons of safety, is undesirable. The other solution requires extra time and effort while in addition a suitable container has to be at hand for transferring water from the tap to the appliance.

It is the object of the invention to provide an electrical appliance for the preparation of infusions of the kind mentioned in the preamble, which does not exhibit

said disadvantages and which possesses the combination of characteristics referred to in claim 1.

5 With the appliance for the preparation of infusions according to the invention the entire water reservoir can be detached from the appliance, be filled under the tap and subsequently replaced on the appliance for the preparation of infusions. It will be apparent that this construction of the appliance for the preparation of infusions according to the invention avoids the disadvantages of the known appliances. In addition, to facilitate the manipulation of the water reservoir the appliance for the preparation of infusions according to the invention preferably possesses the feature of claim 2. Owing to the presence of a handle and a pouring part and to suitable designing, the water reservoir of the appliance for the preparation of infusions according to the invention has thus the form of a water jug which can be used separate from the appliance for the preparation of infusions. An additional advantage of the invention is that the water jug can also be used for other purposes, for instance, as measuring jug or as carafe, etc.

15 Very important is a preferred embodiment of the invention possessing the further features mentioned in claim 3. This embodiment provides the water jug substantially with the properties generally known for electrical water boilers that can be removed from a standard and whereby a number of electrical contacts are broken. The appliance for the preparation of infusions according to the invention thus substantially serves the same purpose as such known water boilers in addition to the already existing functionality of an electrical appliance for the preparation of infusions. Thus, this embodiment of the invention creates a completely new type of appliance for the preparation of infusions which, apart from serving as appliance for the preparation of infusions, can also serve as electrical water boiler and, after the water content has been heated, the water jug can be used independently of the appliance for totally different purposes

than the preparation of infusions, for instance, for making soup, broth, etc.

One embodiment of the invention is characterized by the feature of claim 4. In this embodiment the valve disc of the valve present as such in the appliance for the preparation of infusions of the kind referred to in the preamble is locked at the user's own discretion. The locked situation avoids that any hot water flows away through the orifice in the valve seat when the water jug containing hot water is removed.

An important next embodiment of the invention is characterized by the features of claim 5. This embodiment comprises an automatic valve in the water jug which, when the water reaches a certain temperature, for instance 100°C, causes the valve in the bottom of the water jug to open automatically. Thus, when the water jug is on the appliance for the preparation of infusions and the valve is not locked, the appliance for the preparation of infusions has the same function as the appliance for the preparation of infusions already known from the prior art and referred to in the preamble, which also, when the water has reached boiling temperature, cause the valve to open automatically so that the appliance for the preparation of infusions automatically commences to infuse, for instance, to make coffee.

Preferably a further embodiment is applied which possesses the features of claim 6. The advantage of this embodiment is that the thermally operated valve may be left completely undisturbed allowing it to function as normal, while an additional valve is present which serves exclusively to allow the water jug, after the water content has reached boiling temperature, to be removed from the appliance for the preparation of infusions, without the loss of any hot water through the orifice in the bottom. Preferably, yet a further embodiment is used possessing the features of claim 7. In this embodiment the lockable valve is the most accessible, providing many possibilities for constructive embodiments of the locking means.

It is, for instance, possible to apply an embodiment in accordance with claim 8. In this embodiment simple mechanical valve locking means are employed which can be operated manually. Embodiments of such manually operated locking means are described in claims 9 and 10.

The invention will now be elucidated by means of a non-limiting example with reference to the drawing which shows some exemplary embodiments of an appliance for the preparation of infusions according to the invention in the form of a coffee maker, in which:

Figure 1 is a perspective view of a coffee maker in accordance with the invention according to a first embodiment,

Figure 2 again shows the perspective view of Figure 1, but now the electrical water jug is removed from the top of the coffee maker,

Figure 3 shows an exploded perspective view of the top portion of the coffee maker in accordance with the Figures 1 and 2,

Figure 4 is a cross section of the top portion of the coffee maker shown in Figure 1,

Figure 5 shows an enlargement of a portion of Figure 4,

Figure 6 is a similar perspective view as shown in Figure 2 of a coffee maker according to another embodiment of the invention,

Figure 7 shows an enlarged perspective view of the electrical water jug which is part of the coffee maker of Figure 5, and

Figure 8 shows an exploded view, partially in perspective of the electrical water jug of Figure 6.

The Figures have been drawn on random and not always identical scales. Similar parts in the various Figures are indicated by identical reference numbers.

Figures 1-5 show an electrical coffee maker in accordance with a first embodiment, generally indicated by reference number 1, which coffee maker comprises a water reservoir 2 for holding a desired amount of water 64 and which is provided with a bottom 3, see Figure 3. As can be

seen particularly clearly in Figure 4, the water reservoir 2 comprises a generally cylindrical glass wall 4, which at its top side is provided with a plastic rim 5, a lid 6 that can be swivelled aside or be removed, covering the top of the reservoir, a transitional portion 7 made from metal, such as cast aluminium, between the glass wall 4 and the bottom 3, as well as silicone rubber sealing elements 8 and 9 respectively between the transitional portion 7 and the glass wall 4, and between the transitional portion 7 and the bottom 3. The bottom 3, too, is made from a metal which is a good heat conductor such as, for instance, cast aluminium.

In a manner which in itself is known, a substantially annular electrical heating element 10 is pressed into a groove 11 at the underside of the bottom 3. The base, the substantially annular heating element and a number of other parts comprising the water reservoir and which will be described later, are of a usual design known in itself and will for the sake of brevity not be described in detail. As known from the prior art, the electrical heating element 10 serves for electrically heating an amount of water 64 in the water reservoir.

The electrical heating element 10 is connected with an electric circuit for the supply of electric current. This electric circuit is an entirely conventional one. In the Figures 1 to 3 only a few portions of the circuit can be seen such as an electric wire 12 connected with the electrical heating element 10, a supply cable 13 as well as (see Figures 1 and 2) two operating knobs 14 and 15 and an indicator light 16.

Under the water reservoir 2 there is a coffee filter unit 17. This unit comprises a plastic jacket 18 containing a removable plastic filter holder 19 serving to hold a paper coffee filter, and at its bottom side a valve comprising a valve disc 20, an orifice 21, a valve seat 22 and a reset spring 23. The coffee filter unit is an entirely conventional one and will therefore not be discussed in detail.

Under the coffee filter unit 17 a coffee pot 24 can be placed in the known manner. According to the known embodiment, the coffee pot 24 comprises a lid 25 that can be swivelled aside or be removed, a glass wall 26 and a handle 27. The lid 25 may be made from plastic and incorporates a valve support 28 made in one piece with the lid which, in the situation shown in the Figures 1 to 3, pushes the filter unit's valve disc 20 upward, allowing the orifice 21 to let the filtered coffee run into the coffee pot. The coffee runs via openings 29 provided under the valve support 28 into the coffee pot.

The coffee pot 26 can be placed in the usual manner on a base 30 of a coffee maker, which base incorporates the customary electrical hotplate for keeping the freshly made coffee hot.

For the supply of hot, virtually boiling water from the water reservoir 10 to the top of the coffee filter unit 17, a valve, generally indicated by reference number 31, is provided in the bottom 3 of the water reservoir, which can be moved between an open and a closed position, and a disc-like valve body 32 inside a valve housing consisting of an upper portion 34 pressed into a lower portion 33. The valve disc 32 is made of bimetal. Figure 4 shows the valve 31 in the closed position. The valve disc 32 is arched and its top side presses with a resilient force against a central portion of the underside of the top portion 34 of the valve housing. At its periphery the valve disc is supported with a resilient force by an annular valve seat 35 in the lower portion 33 of the valve housing. When the valve is open, heated water can flow out through a number of upper orifices 36 provided in the upper portion 34 of the valve housing and subsequently through a central narrowing orifice 37 which is provided in the valve seat 35 in the lower portion 33 of the valve housing. In the closed position the orifice 37 is closed off by the valve disc 32 and in the open position it is enabled to let the water pass through to the coffee filter unit.



At the underside the valve housing portion 33 is positioned in a sealing part 38 made from, for instance plastic or metal, which is provided for sealing the underside of the parts constituting the water reservoir 2. In the centre of the sealing part there is a receiving chamber 39 for the hot water flowing through the orifice 37. The bottom of the receiving chamber has a number of orifices 40 (one of which is shown in Figure 4), for the passage and distribution of hot water to the coffee filter unit 17.

Up to this point the coffee maker is virtually the same as the above-mentioned known coffee makers. With respect to further details concerning, for instance, the electric circuit connected with the heating element 10 or concerning the valve 31, reference is made to said known appliances and other similar appliances.

According to the invention the water reservoir 2 is a separate unit which can be removed from the top of the coffee maker 1 and replaced again. See Figure 2, in which the water reservoir 2 is shown as a separate unit, removed from the coffee maker. To this end the coffee maker in the embodiment illustrated is provided with a substantially cylindrical, annular top piece 41 for receiving the bottom of the water reservoir 2. To this end the water reservoir is provided with a substantially cylindrical jacket 42 with an outer part 42A and a longer inner part 42B having a smaller diameter. The part 42A has substantially the same diameter as the annular top piece 41 and the inner jacket part 42B has a smaller diameter such that it fits with a small clearance inside the annular top piece 41. The jacket part 42 acts together with the silicone rubber seal 8, has roughly the same diameter as and directly adjoins the glass wall 4 of the water reservoir and surrounds the metal transitional portion 7 and the bottom 3 of the water jug with the parts therein and thereon. The sealing portion 38 seals the bottom of the inner jacket portion 42B so that, seen from the outside, it forms the seal at the bottom of the removable water reservoir 2. In order to facilitate the removal and replacement of the

water reservoir it is provided with a handle 43. Further, a pouring part 44 is provided which in the embodiment illustrated consists of a portion in the top rim 5 of the water reservoir which is shaped for pouring. This gives  
5 the water reservoir 2 the general form of a water jug, see especially Figure 2. The entire water jug may be removed from the coffee maker with the aid of a handle 43 in order to, after swivelling the lid 6 aside or removing it, be filled under a tap. After that the water jug is replaced  
10 on the coffee maker. After the water has been heated in the water jug 2 it may be removed again from the coffee maker and the hot water may be used for any purpose. Thus the coffee maker according to the invention extremely conveniently possesses a dual function, namely in the first  
15 place as coffee maker and in the second place as electric water boiler. In contrast with the known coffee makers, the coffee maker according to the invention thus has two removable jugs, namely the coffee pot 26 beneath the coffee filter unit 17 and the water boiler 2 above the coffee  
20 filter unit 17. Significantly, the dimensions of the complete coffee maker need be no larger than those of a coffee maker presently in use, while still providing the convenient dual functionality.

In order to have complete freedom in using the  
25 water jug independently of the remaining part of the coffee maker, the embodiment according to the drawing is of import in which the water jug 2 and the remaining part of the coffee maker are provided with interacting electrical contact elements in the said electric circuit 12-16 which  
30 on removal of the water jug become separated, thereby breaking the electric circuit and which, on replacement of the water jug, are reconnected to close the circuit again. One thing and another can be carried out in different ways, for instance, in a way that is already known for  
35 electrical water boilers that can be removed from a base. For instance, Figure 4 shows that the electric wire 12 extending to the heating element 10 may be connected with a pin 45 protruding outward under the handle 43, which pin makes contact with a spring-activated contact tag 46 which

is connected with one of the cores 47 of the cable 13. To electrically connect the water jug, three such pins 45 may be mounted next to each other, interacting with an equal number of spring-activated contact elements 46. When the water jug is removed, the contact elements 45 are separated from the contact elements 46 and when the water jug is replaced, said contact elements are again allowed to make contact. Figure 2 shows a safer solution in which three openings 48 are provided in the top of the annular top piece 41, under which there are spring-activated contact elements which when the water jug is replaced, interact with axially directed pins (not shown) on the underside of the handle 43 which project through the openings 48.

With regard to the general construction of the coffee maker it is mentioned that the lower portion comprises a base 30 and connected therewith a vertical support 49 housing the operating knobs 14 and 15 and the indicator light 16. Mounted in the support is a metal tube, see Figure 4, extending upward and through which runs the electric cable 13 and possibly other electric wiring. By means of a casing 51 surrounding the tube 50 the filter unit 17 can be swivelled to a limited extent to facilitate the removal of the filter holder 19 and possibly the filter together with any coffee, and to allow the application of a filter and coffee. The annular top piece 41 is provided with a casing 52 having a raised portion 53 at the top side for the insertion of the electrical pins which are part of the contact elements of the electrical water boiler. The casing 52 is fixed to the tube 50. The construction of the appliance is modular. This allows appliances of practically the same construction to be equipped with a different filter holder, for instance, as is more customary in some countries, with a flat filter. When the appliance is used to make tea, the filter holder 19 may optionally be replaced by a simpler funnel-like part, while a usual filter bag containing tea can be put in the jug 24 which may optionally be replaced by a tea pot. If desired, the coffee filter unit 17 may be replaced

by another unit which is specifically suited and the coffee pot may be replaced by a tea pot.

The known coffee makers are also suitable for the preparation of other infusions such as tea. Nonetheless,  
5 it is important to appreciate that the appliance according to the invention is more suitable. In many areas chlorine is added to the drinking-water for the sake of the sterility of the water. When making tea, for instance, it is of importance to allow the water to boil for a few minutes to  
10 remove the chlorine which is detrimental to the flavour of the tea. With the appliance according to the invention it is possible to prevent the valve 31 from opening when the water reaches boiling temperature or, as described, an extra valve may be used to optionally prevent this. After  
15 the water has boiled for a few minutes, the valve can be opened manually or automatically and the heating element 10 can also be switched off manually or automatically.

When using the appliance as coffee maker, the water jug 2 is removed from the top of the coffee maker and  
20 filled with cold water, for instance, from the tap. Due to the bimetal valve element 32 the valve remains closed so that no cold water can flow out from the bottom of the water jug. The water jug with water contents is then replaced on the remaining part of the coffee maker, thereby closing the electric circuit. The heating element 10  
25 may now be activated. After the required temperature, for instance the boiling temperature of the water, is reached the valve 31 opens due to the turning down of the bimetal valve 32, so that the force of gravity makes the water  
30 flow from the water jug through the valve's orifices 36 and 37 into the coffee filter unit 17. Additional means for the control of the thermally operated valve 31 and the heating element 10 will not be discussed in detail, as they may be entirely in concurrence with those already  
35 known from the appliances generally available on the market. Suffice it to mention at this point that a temperature sensor 54 is provided in the hollow handle 43 which, at the presence of steam above the water contents 12, generates a signal to signal that the water is boiling, and

causes the valve disc 32 to be changed to the open-position. In addition, thermostatic means are provided for switching off the current to the heating element 10.

When the valve is open, the volumetric flow rate of the heated water through the bottom of the water jug is only low. When using the water jug as electrical water boiler, it will generally be desirable that after the boiling temperature has been reached and certainly after the water boiler has subsequently been removed from the remaining part of the coffee maker no water flows out from the bottom of the water jug. In accordance with an embodiment of the invention, which is not shown in the drawing, means for locking the valve may be provided for locking the valve disc 32 when it is closed. This could, for instance be effectuated with the aid of external means such as a switch for influencing the circuit of the sensor 54 in such a way that the valve disc 32 remains closed, even if the water is boiling. In this case hot water is prevented from flowing out from the bottom of the water jug, and the water boiler can be removed from the coffee maker without any danger of hot water flowing out from the bottom of the water boiler. Other locking means which are not shown in the drawing are also conceivable, partly depending on the design of the valve in the bottom of the water jug. For instance, it is also possible to use mechanical means for locking the valve in the closed position.

Another possibility is that in contrast with what is illustrated in Figures 4 and 5, the valve disc is not a bimetal disc, which in a sense may be considered as auto-exciting and auto-controlling, but that a separate valve actuator is provided for moving the valve disc of the valve between the open and the closed position, subject to temperature. A possibility is, for instance, a magnetic valve which, in accordance with a temperature signal, is activated to open the valve, and in the non-activated condition keeps the valve closed under pressure from a spring. In such an embodiment the valve disc may be locked in the closed position by ensuring that when the water jug is used as electrical water boiler, the electric circuit

in which the valve actuator is incorporated is connected in a way such that the valve actuator is not excited, so that it is incapable of opening the valve.

Figures 3, 4 and 5 show another possibility. The embodiment of the invention shown there comprises two valves connected in series, namely a lower valve at the lower side and an upper valve at the top side. One of these two valves comprises the thermally controlled bimetal valve 31 but may in principle also comprise another type of thermally controlled valve. The other valve, in this case the upper valve, can be locked. Thus, in this embodiment the locking means do not influence the thermally controlled valve but exclusively the second valve provided especially for this purpose. In the embodiment shown in the Figures 3 and 4 the valve disc of the upper valve consists of a valve disc 54 which is roughly hat-shaped in cross section and which along the periphery is provided with a torus-shaped sealing element 55 made from silicone rubber. In the valve's closed position (see Figure 4) this sealing element rests on the valve seat 58 in the bottom 3 of the water jug, thereby closing off the water supply to the valve 31. When the valve disc 54 is moved upward (indicated in Figure 4 by a dotted line), the water supply is not obstructed. For the purpose of locking the valve disc 54 in its lowest position, valve-locking means are provided having a manually operable valve operating member 56 on the outside of the water jug, which interacts mechanically with the valve disc 54 in order to lock the same in the lowest position. For this purpose locking means are provided in the form of a rotatable operating rod 57 passing through the lid 6, a valve operating member in the form of said operating knob 56 at the top of the operating rod, and a cylindrical receiving part 59 with an opening 60 at the respective valve seat 58 on the bottom 3 of the water jug for receiving the lower end of the operating rod 57, and having interacting locking means at the lower end of the operating rod 57 and said receiving portion 59. With the aid of said locking means the operating rod 57 can, with regard to the water jug, be

locked into a locking position after insertion of the lower end into said opening 60 of the receiving part 59 and the subsequent rotation of the operating rod over a certain angle. To this end the valve disc 54 of the upper valve is mounted at some distance from the lower end of the operating rod 57. At its lower end the operating rod is provided with a projection 61 extending in a perpendicular direction thereto. The opening 60 is formed such that the projection 61 can enter the opening after which, by turning the operating knob 56, the operating rod is fixed in the receiving portion 59 by means of a bajonet lock, so that the valve 54 is in the locked position. In the locked position the silicone-rubber ring 55 rests under some pressure on the valve seat 58, so that the valve is closed and does not let any water through. On the top of the lid 6 two markings 62 and 63 are provided which indicate, subject to the position of the operating knob 56, whether the water jug is in use for making coffee or for boiling water for other purposes.

The Figures 6 and 7 show a coffee maker of another design, although its functionality practically corresponds to the coffee maker according to Figures 1 to 5. The description of the coffee maker shown in the Figures 6 and 7 will therefore be less detailed. The appliance generally indicated by reference number 80 comprises a water jug 81 with a lid 82, a handle 83 and a jacket part 84, a coffee pot 85 with a lid 86 and a handle 87, a coffee filter unit 88 and an annular top piece 89 onto which the jacket part 84 of the water jug 81 can be placed. In this embodiment the base 90 of the coffee maker is connected with parts above the base via two columns 91 and 92.

In this embodiment according to the invention the type of upper valve is of interest and the manner in which it is locked. The upper valve comprises a valve which is rotatable over a certain angle having a valve disc 93 which is rotatably mounted on the valve seat 94. Both the valve disc 93 and the valve seat 94 are provided with openings 95 and 96 which, when the valve is open, are aligned in each others extended direction, while they are

not aligned when the valve is closed. The locking means for locking the valve in the closed position comprise a substantially Z-shaped operating member indicated by the general reference number 97. The operating member comprises a lower part 97A, connected by one end to the rotating valve 93 and extending up to the wall 98 of the water jug's lower portion 97A, and joined thereto, a middle part 97B extending along the wall of the water jug, and an upper portion 97C which is joined to the middle portion and which at the top of the water jug extends to the exterior of the water jug. The upper portion 97C incorporates an operating element 99 which can be moved along the exterior of the water jug 81. In the embodiment illustrated said operating element is a plastic knob attached to the upper portion 97C of the operating member 97.

The valve disc 93 is mounted in the centre by means of a fastening element 100 such as a screw or a rivet or a glued-in pin or the like and is, if necessary, to some extent clamped so as to be able to rotate. One thing and another is designed such that when the openings 95 in the valve disc are moved all the way in relation to the openings 96 in the valve seat, no water will be able to flow via the bottom of the water jug.

The top rim of the wall 98 of the water jug is provided with a recess 101 having a length such that the operating member 97 can be rotated with the aid of the operating knob 99 between the ends of the recess 101 between a far right position as shown in Figure 6, in which position the valve is locked so that no water can flow from the bottom of the water jug, and a left position against the other end of the recess 101, in which position water can flow unhindered through the openings 95 and 96 of the valve disc and the valve seat respectively, rendering the water jug, after having been placed on the remaining part of the coffee maker 80, suitable for making coffee. Near the two far ends of the recess 101 marks 102 and 103 are provided to visually indicate in which position the operating element 99 has to be placed in order to use the water jug in correspondence to the two possible



functions, i.e. as water boiler or as part of the coffee maker 80.

5 In the above the electrical appliance for the preparation of infusions according to the invention is elucidated with reference to two exemplary embodiments of coffee makers. However, the invention is in no way limited to these exemplary embodiments but comprises any embodiment within the scope of the appended claim 1. The form of the water jug may be altogether different to the one shown in  
10 the drawings. The technical details with regard to locking one of the valves in the water jug or to connecting the water jug with the remaining part of the coffee maker may differ altogether from those described. Perusal of the present specification and examination of the enclosed  
15 drawings will enable the person skilled in the art to apply other technical solutions.

CLAIMS

1. An electrical appliance for the preparation of  
5 infusions (1), comprising:

a water reservoir (2) for holding a desired amount  
of water (64) and provided with a bottom (3),

an electrical heating element (10) at the said bot-  
tom (3) for electrically heating the amount of water (64),

10 an electric circuit (12-16, 45-47) for the supply  
of electric current to the heating element (10),

an infusion jug (24) that can be placed under the  
water reservoir,

a between a closed position and an open position  
15 movable valve (31) in the said bottom (3) having a valve  
seat (35) provided with an orifice (37) and having a valve  
disc (32) to close the orifice in the closed position and  
to open the orifice (37) in the open position to allow the  
hot water to flow through,

20 **characterized** in that the water reservoir (2) is a  
separate unit which can be removed from the top of the  
appliance for the preparation of infusions and replaced  
again.

2. An electrical appliance for the preparation of  
25 infusions according to claim 1, **characterized** in that the  
water jug (2) is provided with its own handle (43) and a  
pouring portion (44), and that it has the general form of  
a water jug.

3. An electrical appliance for the preparation of  
30 infusions according to claim 1 or 2, **characterized** in that  
the water jug (2) and the remaining portion of the appli-  
ance for the preparation of infusions are provided with  
interacting electrical contact elements (45, 46) in the  
said electric circuit (12-16, 45-47) which contact  
35 elements on removal of the water jug become separated from  
the remaining portion of the appliance for the preparation  
of infusions, thereby breaking the electric circuit, and  
which on replacement of the water jug on the remaining

part of the appliance for the preparation of infusions are reconnected, thereby restoring the circuit.

4. An electrical appliance for the preparation of infusions according to claims 1, 2 or 3, characterized in that valve-locking means are provided for locking said valve disc (32) into the closed position.

5. An electrical appliance for the preparation of infusions according to claim 4, characterized in that said valve (31) comprises a thermally controlled valve,

temperature sensors are provided for sensing the temperature of the said water contents and connected therewith a thermally controlled valve actuator for moving the valve disc of the valve between the opened and the closed position, subject to temperature, and

the movement of the valve disc from the closed position to the opened position by the thermally controlled actuator can be locked by means of said valve locking means.

6. An electrical appliance for the preparation of infusions according to claim 4, characterized in that two valves (31; 54) are provided in series, namely a lower valve (31) at the side of the water jug facing the coffee filter unit (17), and an upper valve (54) at the side of the water jug facing toward its top,

one of the two valves consists of a thermally controlled valve (31) and

the other valve consists of a valve (54) that in the closed position can be locked by means of the said locking means.

7. An electrical appliance for the preparation of infusions according to claim 6, characterized in that the lower valve comprises the thermally controlled valve (31) and the upper valve comprises the lockable valve (54).

8. An electrical appliance for the preparation of infusions according to claims 4 to 7, characterized in that

the valve locking means comprise a manually operable valve operating member (56) which is provided on the outside of the water jug (2),

5 a movable locking portion (57) is provided which interacts mechanically with the valve disc (54) for mechanically locking the valve disc in the closed position, and

said valve operating member (56) is mechanically coupled with said locking portion.

10 9. An electrical appliance for the preparation of infusions according to claim 8, **characterized** in that the water jug is provided with a lid (6) on its top,

the said locking means comprise:

15 a rotatable operating rod (57) passing through the lid,

an operating knob (56) at the top of the operating rod,

20 a receiving portion (59) at the respective valve seat (58) on the bottom (3) of the water jug for receiving the lower end of the operating rod and at said receiving portion (59), with the aid of which the operating rod with regard to the water jug can be locked into a locking position after inserting the lower end of the operating rod into  
25 said opening (60) of the receiving portion (59) and the subsequent rotation of the operating rod over a certain angle,

30 the valve disc (54) of the upper valve surrounds the operating rod (57) at some distance from the lower end and

when the operating rod (57) is in the locking position, the valve disc (54) of the upper valve is in the locked position on the valve seat (58).

35 10. An electrical appliance for the preparation of infusions according to claim 8, **characterized** in that

the upper valve comprises a valve which is rotatable over a certain angle having a valve disc (93) which is rotatably mounted on the valve seat (94), and

said locking means comprise:

5 a substantially Z-shaped operating member  
(97) comprising a lower part (97A) connected by one  
end to the rotating valve (93) and extending up to  
the wall (98) of the water jug's (81) lower portion  
97A, joined thereto a middle part (97B) extending  
along the wall of the water jug, and an upper por-  
tion (97C) joined to the middle portion and at the  
top of the water jug extending to the exterior of  
the water jug, and

10 an operating element joined to said upper  
part (97C) and movable along the exterior of the  
water jug (81) for rotating the valve between the  
closed position and the open position (Figures 5-  
7).

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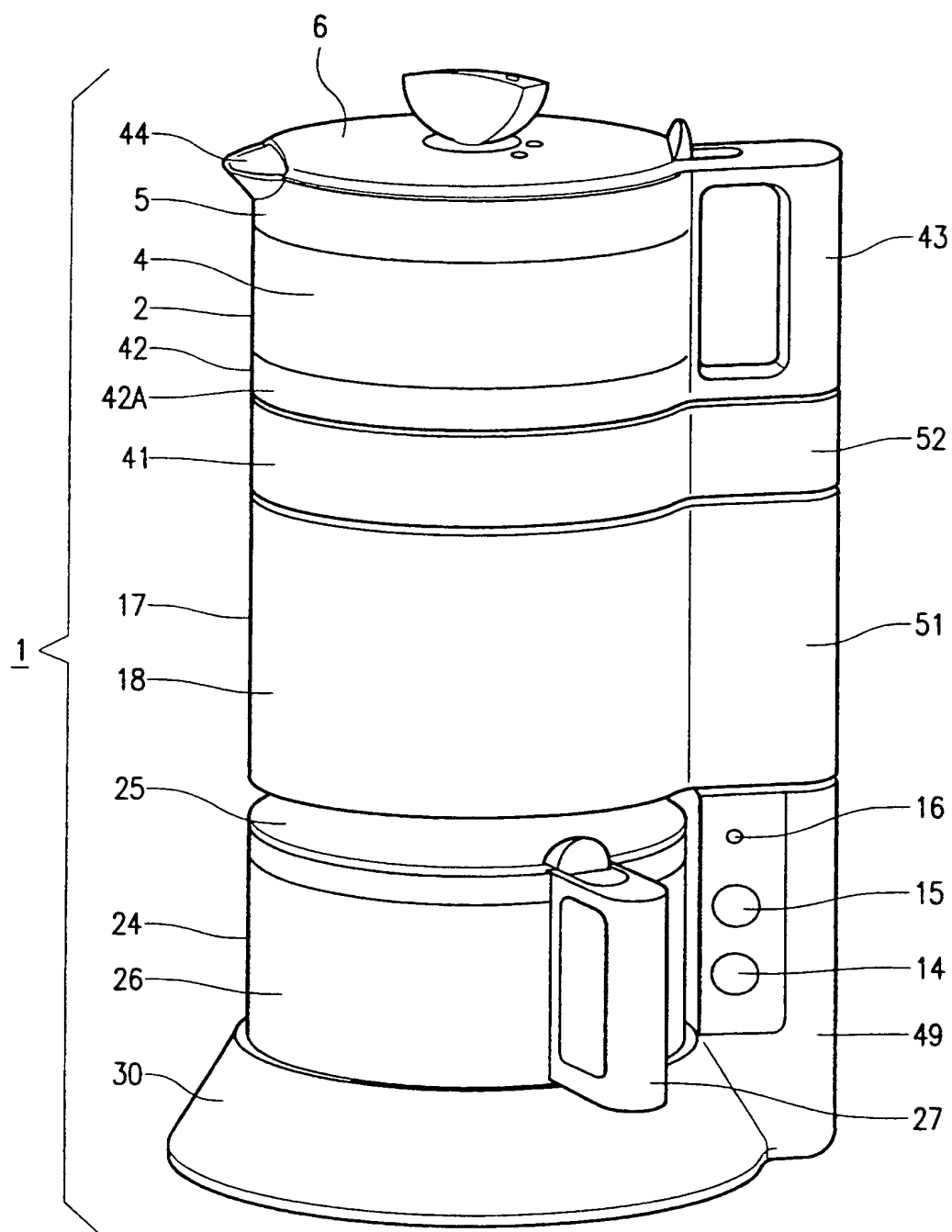


FIG. 1

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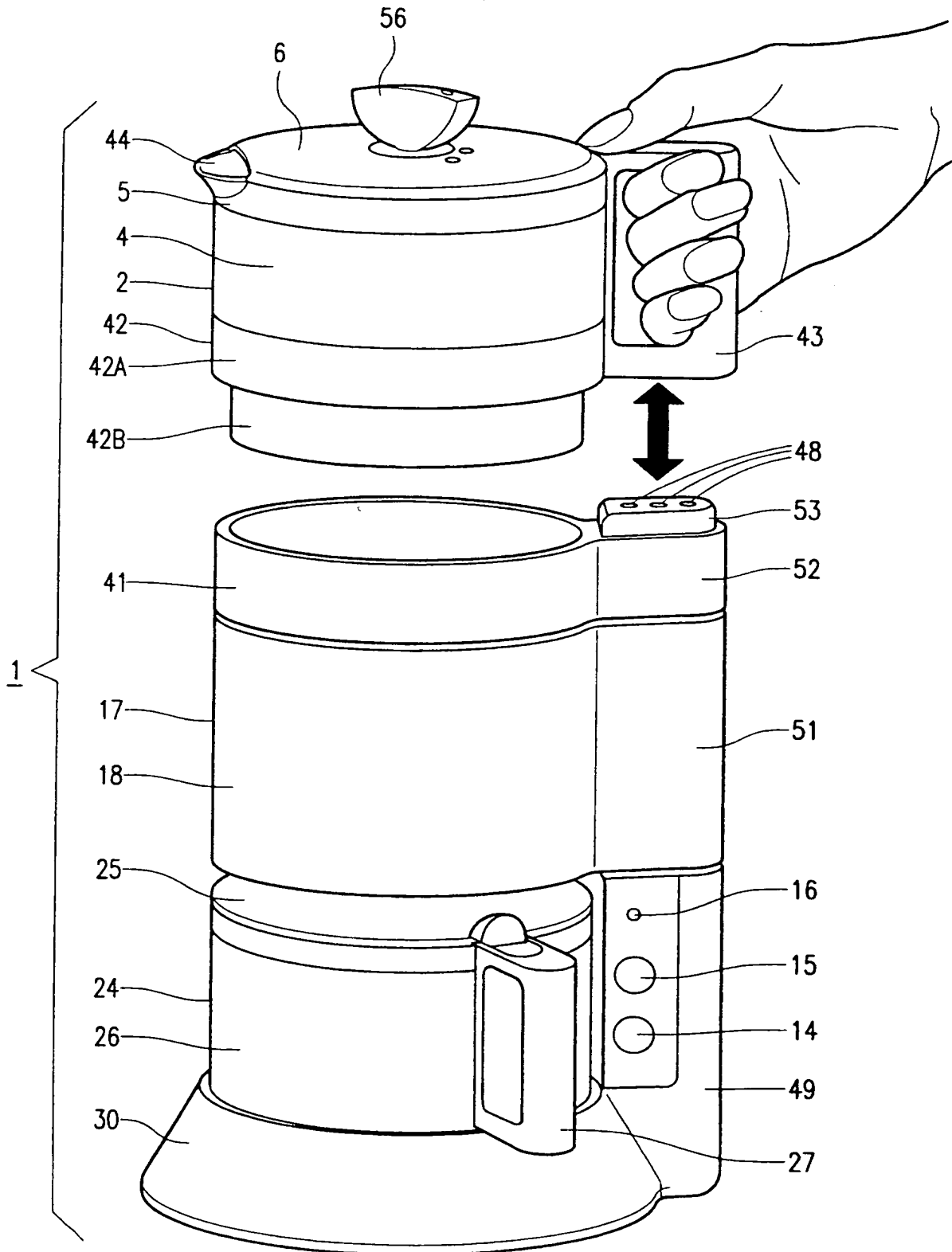


FIG. 2

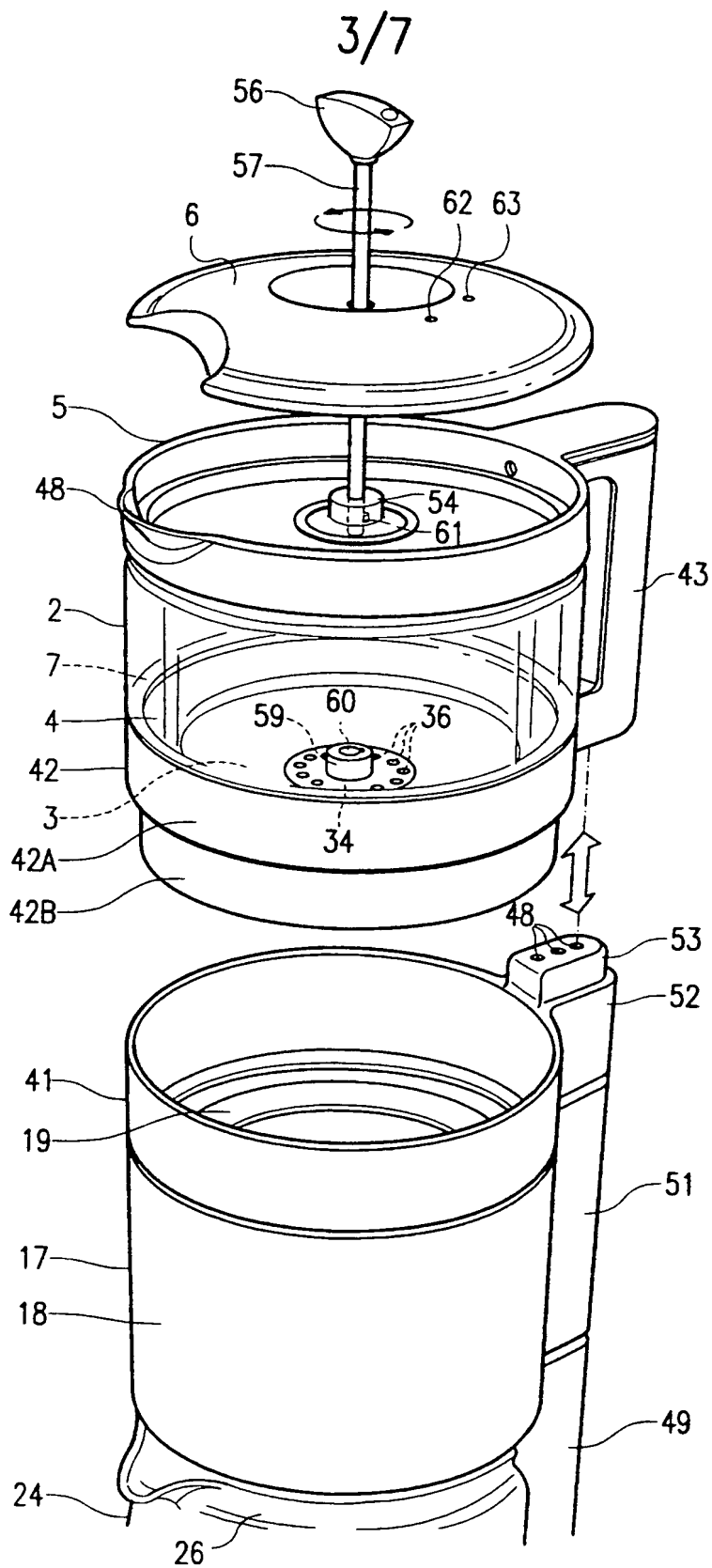
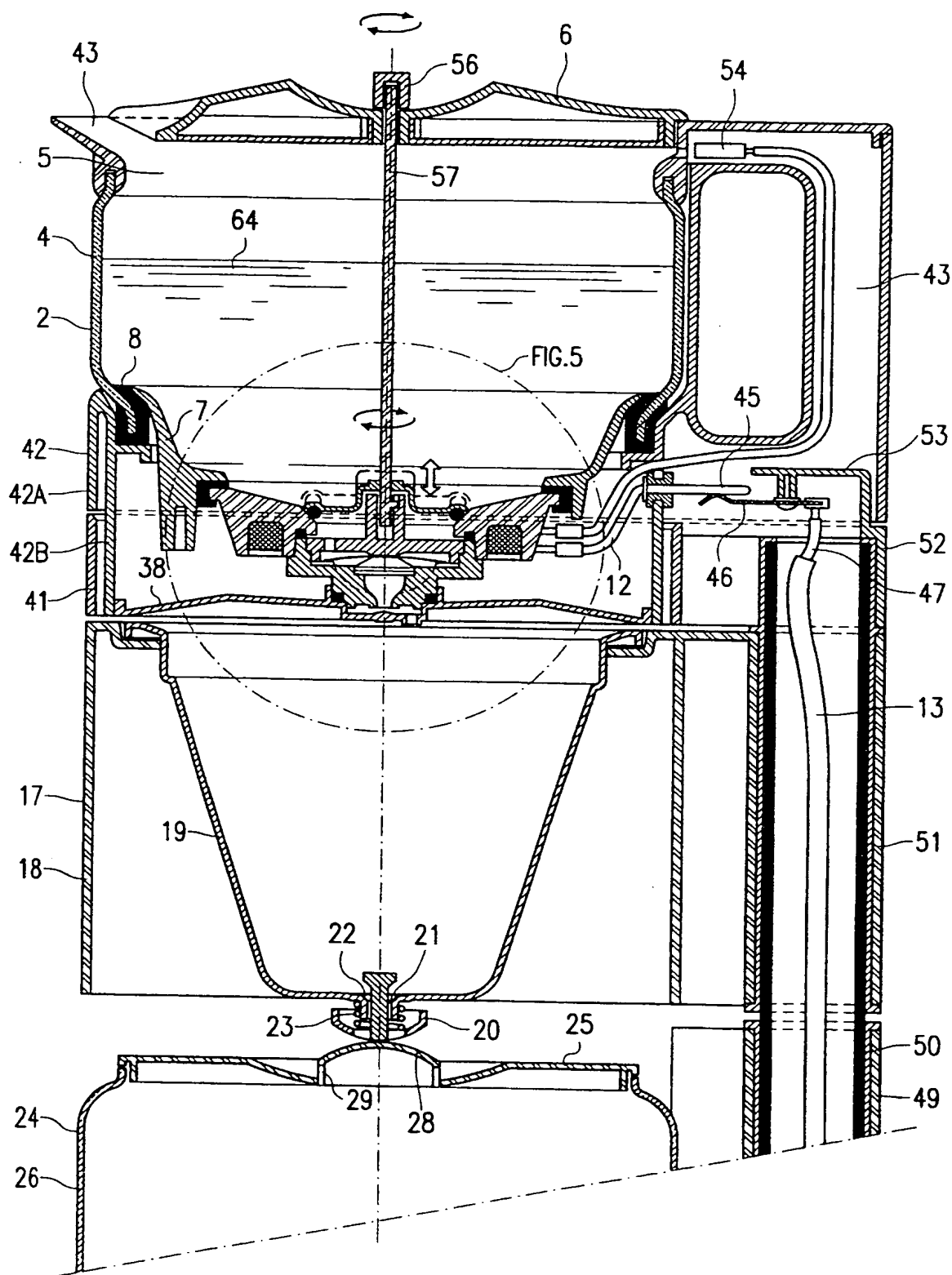


FIG. 3



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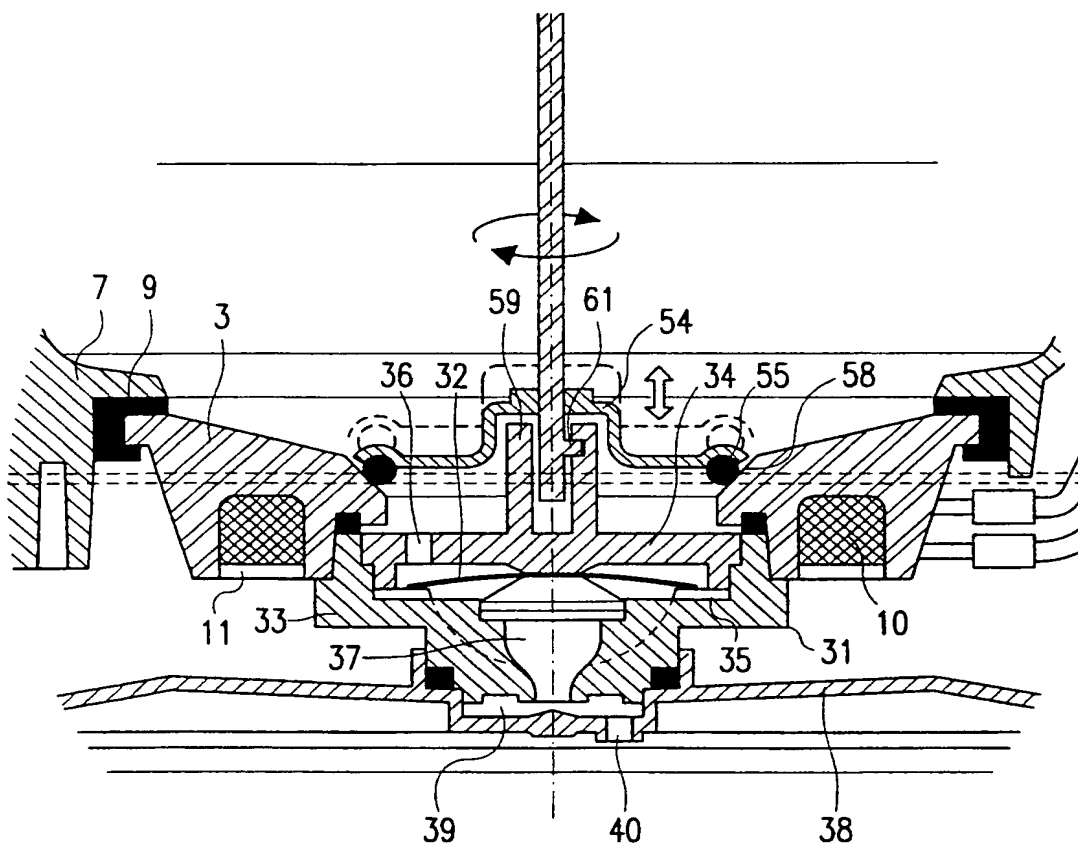


FIG. 5

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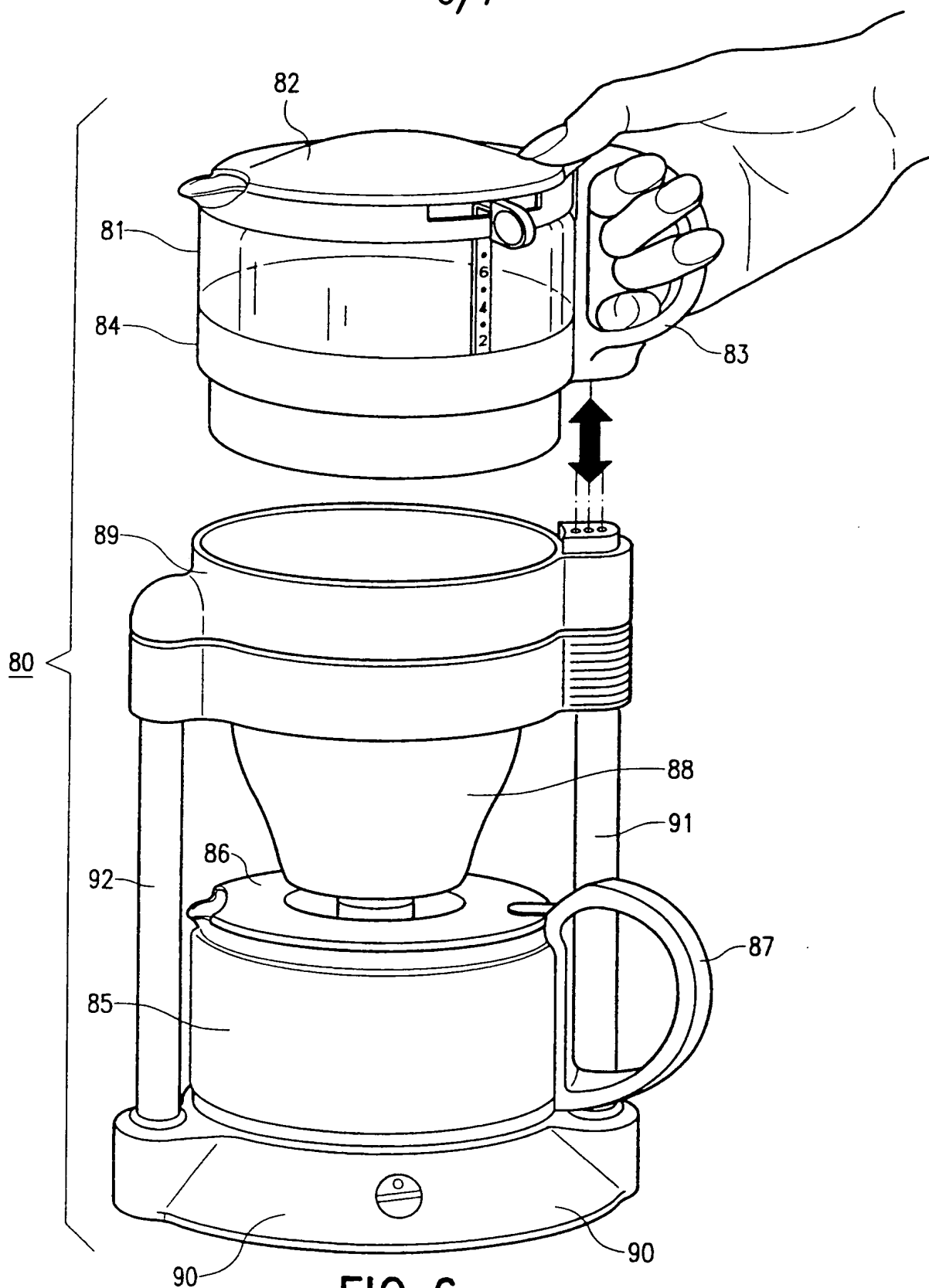


FIG. 6

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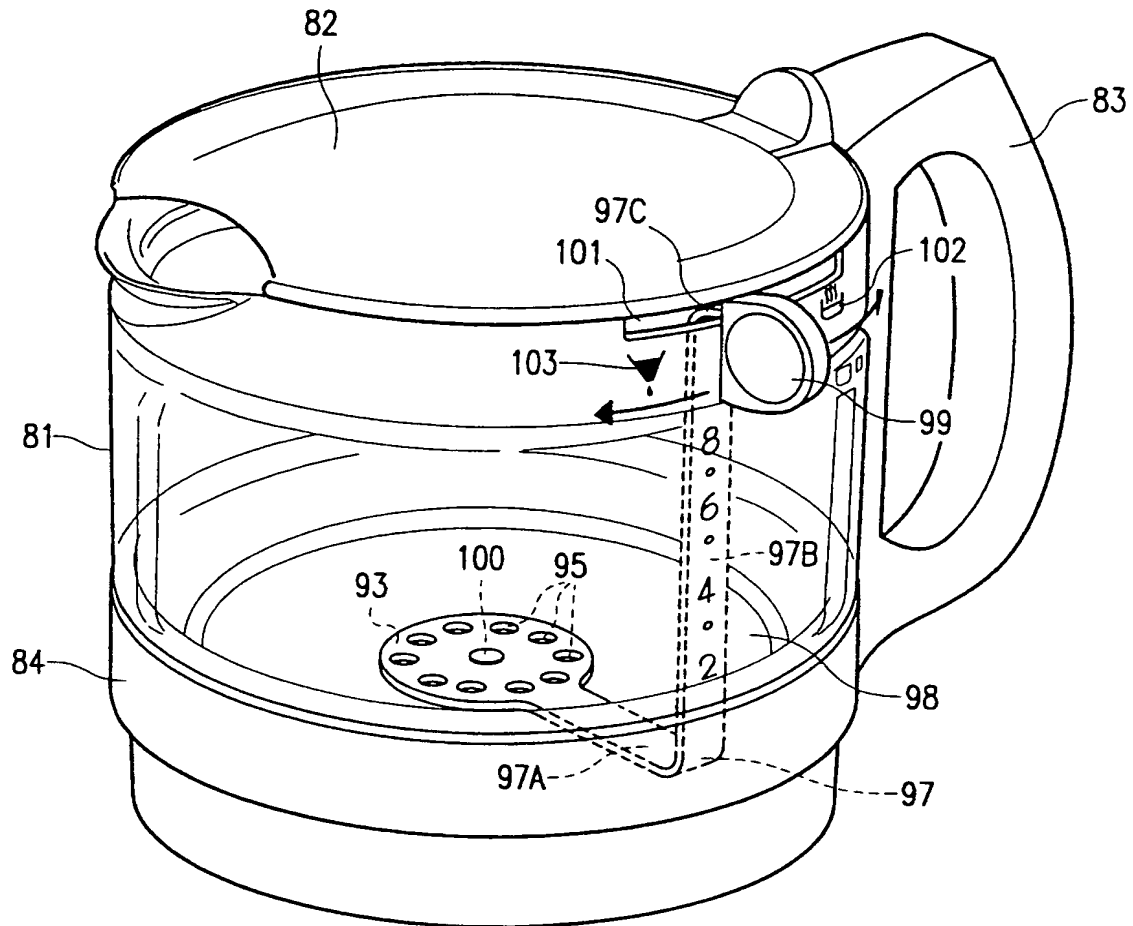


FIG. 7

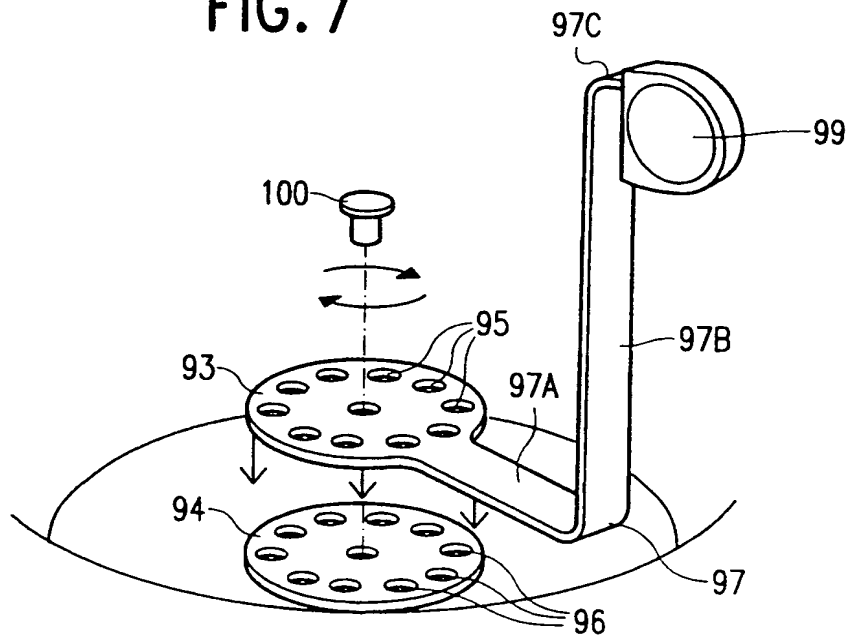


FIG. 8

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/NL 98/00364

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 A47J31/10

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 A47J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category | Citation of document, with indication, where appropriate, of the relevant passages                           | Relevant to claim No |
|----------|--|----------------------|
| X<br>Y   | US 2 829 583 A (G.H. LEONARD) 8 April 1958<br>see column 3, line 7 - line 57; figures<br>1,2,6               | 1-3<br>4             |
| Y<br>A   | DE 14 04 779 A (R.W. OKIE) 13 March 1969<br>see claim 1; figures 1,3   | 4<br>5               |
| X<br>A   | DE 11 66 949 B (H. BEDALL) 2 April 1964<br>see column 4, line 14 - line 43; figures<br>1,2                   | 1,2,4<br>5           |
| A        | DE 15 940 C (A. RUNGE) 27 October 1881<br>see page 2, left-hand column, paragraph 2<br>- paragraph 3; figure | 1,2                  |

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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

19 October 1998

Date of mailing of the international search report

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| Category | Citation of document, with indication, where appropriate, of the relevant passages                                     | Relevant to claim No |
|----------|--|----------------------|
| A        | US 4 165 681 A (I.R. BELINKOFF)<br>28 August 1979<br>see column 4, line 44 - column 5, line 15;<br>figure 2<br>---     | 1,4,8                |
| A        | GB 2 253 990 A (I. HIGGINS)<br>30 September 1992<br>see page 3, paragraph 3 - page 5, last<br>paragraph; figure<br>--- | 1-4,6                |
| A        | DE 297 04 023 U (PRINCESS HOUSEHOLD<br>APPLIANCES BV) 28 May 1997<br>see claims 1-3; figure 1<br>-----                 |                      |

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/NL 98/00364

| Patent document<br>cited in search report |   | Publication<br>date | Patent family<br>member(s)   | Publication<br>date      |
|---|---|---------------------|------------------------------|--------------------------|
| US 2829583                                | A | 08-04-1958          | NONE                         |                          |
| DE 1404779                                | A | 13-03-1969          | NONE                         |                          |
| DE 1166949                                | B |                     | NONE                         |                          |
| DE 15940                                  | C |                     | NONE                         |                          |
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| GB 2253990                                | A | 30-09-1992          | NONE                         |                          |
| DE 29704023                               | U | 28-05-1997          | NL 1002532 C<br>GB 2310794 A | 08-09-1997<br>10-09-1997 |

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